

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-7 are in the case.

Rejection of Claims 2-7 under 35 USC 112, second paragraph

Claims 2-7 were rejected under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A) Claim 2 was seen as being indefinite because of the phrase "vinyl acetate based polymer comprises ethylene".

Claim 2 has been amended to insert —polymerized units of—before "ethylene".

- B) Claim 5 was seen as being indefinite because it was not readily ascertainable by the Examiner as to how the recited species further limits the antecedently recited genus, and the metes and bounds of "glycolic acid adduct of sodium sulfite" was seen as engendering indeterminacy in scope.

Claim 5 has been amended to be dependent upon Claim 3. As noted in the specification at page 3, lines 8-9, and page 6, lines 16-18, the glycolic acid adduct of sodium sulfite is sold under the tradename Bruggolite FF-6. The manufacturer describes Bruggolite FF-6 as the glycolic acid adduct of sodium sulfite, but the exact composition is proprietary.

It is believed that these amendments overcome the 112, 2d paragraph rejections.

Rejection of Claims 1-7 under 35 USC 103(a)

Claims 1-7 were rejected under 35 USC 103(a) as being unpatentable over Berghofer et al (US 5,211,400 B1) in combination with Applicants' own disclosure. Berghofer et al. was cited as overlapping in scope with the claimed reducing agents and being used as a cocatalyst for emulsion polymerization in fields where evolution of formaldehyde is undesirable. It was argued that Berghofer et al. exemplifies a process for forming an ethylene/vinyl acetate aqueous polymer emulsion and differs basically from the claimed invention in not expressly teaching the use of N-methylacrylamide (NMA) in the copolymer. It was also argued that the use of NMA as a copolymer is well known as

admitted in the Background of this Invention, and, therefore, it would have been prima facie obvious to add NMA to the polymerization recipe of Run 11 in Berghofer et al.

Response to Rejection

At page 1, lines 12-14, of the instant specification, it states:

"Reduction of formaldehyde in vinyl acetate based emulsions has been achieved by using less favored reducing agents to the formaldehyde sulfoxylates, or by reducing the level of N-methylol acrylamide. ..."

The ability to use NMA in the polymer and still reduce the amount of formaldehyde in the resulting emulsion polymer is the value of the reducing agents of this invention. The formaldehyde-free reducing agent of this invention unexpectedly reduces the amount of formaldehyde in the final polymer emulsion product, compared to other formaldehyde-free reducing agents. See Example 2 of this specification in which polymers of vinyl acetate, ethylene, and NMA were produced using either ascorbic acid (sodium erythorbate) or Bruggolite FF 6 as reducing agent. Use of sodium erythorbate resulted in no additional formaldehyde being formed during the polymerization process. However, unexpectedly, use of Bruggolite FF 6, in the same process, resulted in a reduction of formaldehyde. A summary of the 3 different runs reported in Example 2 is presented below:

Vinyl Acetate-Ethylene-NMA Polymer	Amount of Formaldehyde (ppm) using One of the following Reducing Agents:	
	Sodium Erythorbate	Bruggolite FF 6
A (T _g = -14 °C)	27.2	3.3
B (T _g = 10 °C)	57.1	8.6
C (T _g = 0 °C)	47.5	6.8

The above described reduction in formaldehyde is not reported by Berghofer et al. In fact, Berghofer et al state, at col. 4, lines 22-24, that the compounds disclosed therein have a reducing action comparable to formaldehyde sulfoxylate; but they do not eliminate formaldehyde before, during, or after use. It does not disclose or suggest use of NMA, a

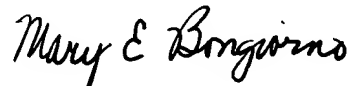
monomer that contains free formaldehyde, as a co-monomer for preparation of polymers using sulphinic acid derivatives as reducing agents.

The above data rebut a prima facie obviousness rejection based on Berghofer et al together with what is well known and admitted in the Background of this Invention. Based on these data it would not have been obvious to use one of the reducing agents of this invention, such as Bruggolite FF 6 (a glycolic acid adduct of sodium sulfite), in place of sodium erythorbate (another formaldehyde-free reducing agent) and obtain a vinyl acetate-ethylene-NMA polymer emulsion containing a smaller amount of formaldehyde.

It is therefore submitted that the claimed invention would not have been obvious based on Berghofer et al together with what is well known and admitted in the Background of this Invention. Berghofer et al do not teach preparation of polymers containing NMA, and do not teach or suggest that formaldehyde would be lowered during the preparation of polymer emulsions in which reducing agents described therein were used. In addition, the data in this case rebut a prima facie obviousness rejection based on Berghofer et al together with what is well known and admitted in the Background of this Invention.

Withdrawal of all rejections is requested.

Respectfully submitted,



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